

Amendments to the Specification

Please replace the paragraph beginning at page 5, line 14 with the following rewritten paragraph:

--The spacer layer 86 is formed by depositing a nonmagnetic metal, typically but not necessarily copper (Cu), upon the second pinned layer [[84]] 82. The free magnetic layer 90 is formed by depositing a ferromagnetic material upon the spacer layer 86, and cobalt iron (CoFe) or nickel iron (NiFe) are typically but not necessarily used. The thickness of the free magnetic layer is typically from approximately 20 Å to approximately 50 Å with a preferred thickness of approximately 30 Å. The bias spacer layer 94 is formed by depositing a nonmagnetic material upon the free magnetic layer 90. The bias spacer layer 94 may be made of, among other materials, ruthenium (Ru), copper (Cu), tantalum (Ta), or chromium (Cr). Typically but not necessarily, the bias spacer layer 94 has a thickness between 5 Å and 45 Å, and preferably approximately 10 Å to approximately 30 Å. The bias layer 98 is formed by depositing a ferromagnetic material with a high magnetic coercivity and a high resistivity upon the bias spacer layer 94. The bias layer is preferably formed of a high magnetic moment material such as Co, Co₃₀ Fe₇₀ (that is, a combination of 30 at.% Co and 70 at.% Fe, where at.% is “atomic percentage”), Co₄₉ Fe₄₉ V₂, Fe and FeN. Because the bias layer has a higher magnetic moment than the free magnetic layer, it can be thinner than the free magnetic layer, and a typical thickness of the bias layer is from approximately 10 Å to approximately 25 Å with a preferred thickness of from 10 to 15 Å. It is desirable that the spacer layer and the bias layer be as thin as they can be to reduce electrical current shunting from the electrical leads through them. A cap layer 102, typically composed of tantalum, and having a thickness of approximately 40 Å is deposited top of the bias layer to protect it during subsequent fabrication steps.--

Please replace the paragraph beginning at page 8, line 10 with the following rewritten paragraph:

--Fig. 3 is an elevational view of the air bearing surface of a read head 130 within the magnetic head 34 according to an embodiment of the invention. Significantly, read head 130 includes a bias pinning layer [[134]] 148, that is not present in the prior art read head 42. The read head 130 includes the S1 shield layer 54, G1 gap layer 58, anti-ferromagnetic layer 66, and a pinned magnetic layer structure 70 that may include a first pinned magnetic layer 74, an anti-parallel coupling layer 78 and a second pinned layer 82. Also included in the read head 130 are the spacer layer 86, the free magnetic layer 90, the bias spacing layer 94 and the bias layer 98. Each of these layers are deposited full film across the surface of the wafer and have been described hereabove with regard to the prior art read head depicted in Fig. 2.--

Please replace the paragraph beginning at page 11, line 10 with the following rewritten paragraph:

--A further embodiment of the present invention is depicted in the elevational view of Fig. 4. As can be seen by comparing the read head 130 of Fig. 3 with the read head 190 of Fig. 4, there are many similar structures and the similar structures of Figs. 3 and 4 are identically numbered for ease of comprehension. Basically, the significant difference between the read head 190 of Fig. 4 and the read head 130 of Fig. 3 is that the depth of the first ion beam etching step is greater in read head 190. Specifically, in read head 190, the ion beam etching step is allowed to proceed down and remove the second pinning pinned layer 82 of the pinned magnetic layer structure 70. Thus the width of the second pinning pinned layer 82 in read head 190 is the same narrow width as the spacer layer 86 and the free magnetic layer 90. This narrow width of the second pinning pinned layer 82 provides a more favorable magnetoresistive effect upon the free magnetic layer 90 than the wider pinned magnetic layer depicted in Fig. 3.--